Grade 5 Math
Subclaim: Major Content

The standard designation is included preceding each evidence statement.
Evidence Statements may:
1. Use exact standard language
2. Be derived by focusing on specific parts of a standard
3. Be integrative - the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements

Evidence Statements	Clarifications	Relationship to Mathematical Practices
Numbers and Operations Base Ten (NBT)		
5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	●Tasks have "thin context" 2 or no context. ●Tasks involve the decimal point in a substantial way (e.g., by involving a comparison of a tenths digit to a thousandths digit or a tenths digit to a tens digit).	MP.2, MP.7
5.NBT.2-2 Use whole-number exponents to denote powers of 10.	●For the explain aspect of 5.NBT.2, see 5.C.3	MP.7
5.NBT.3a Read, write and compare decimals to the thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10)+ 9 x (1/100) + 2 x (1/1000).	●Tasks have "thin context" or no context. ●Tasks assess conceptual understanding, e.g., by including a mixture (both within and between items) of expanded form, number names, and base ten numerals.	MP.7
5.NBT.3b Read, write and compare decimals to the thousandths. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	●Tasks have "thin context" or no context. ●Tasks assess conceptual understanding, e.g., by including a mixture (both within and between items) of expanded form, number names, and base ten numerals.	MP.7
5.NBT.4 Use place value understanding to round decimals to any place.	●Tasks have "thin context" or no context	MP.2
5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.	●Tasks assess accuracy. The given factors are such as to require an efficient/standard algorithm (e.g., 26 x 4871). ●Factors in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 7250 x 40). ●Tasks do not have a context. ●For purposes of assessment, the possibilities are 1-digit x 2-digit, 1-digit x 3- digit, 2-digit x 3-digit, or 2-digit x 4-digit v) ●Tasks are not timed.	

5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	●For the illustrate/explain aspect of 5.NBT.6, see 5.C.1-1, 5.C.2-1, and 5.C.4-3 ●Tasks involve 3- or 4-digit dividends and one- or two-digit divisors.	MP.1, MP.5
5.NBT.7-1 Add two decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	●Tasks do not have a context. ●Only the sum is required. For the explain aspect of 5.NBT.7-1, see 5.C.1-2, 5.C.2-2, and 5.C.4-4 explanations are not assessed here. ●Prompts may include visual models, but prompts must also present the addends as numbers, and the answer sought is a number, not a picture. ●Each addend is greater than or equal to 0.01 and less than or equal to 99.99. ●20% of cases involve a whole number—either the sum is a whole number, or else one of the addends is a whole number presented without a decimal point. (The addends cannot both be whole numbers.)	MP.5
5.NBT.7-2 Subtract two decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	●Tasks do not have a context. ●Only the difference is required. For the explain aspect of 5.NBT.7-2, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. ●Prompts may include visual models, but prompts must also present the subtrahend and minuend as numbers, and the answer sought is a number, not a picture. ●The subtrahend and minuend are each greater than or equal to 0.01 and less than or equal to 99.99. Positive differences only. (Every included subtraction problem is an unknown-addend problem included in 5.NBT.7-1.) ●20% of cases involve a whole number—either the difference is a whole number, or the subtrahend is a whole number presented without a decimal point, or the minuend is a whole number presented without a decimal point. (The subtrahend and minuend cannot both be whole numbers.)	

5.NBT.7-3 Multiply tenths with tenths or tenths with hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	●Tasks do not have a context. ●Only the product is required. For the explain aspect of 5.NBT.7-3, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. ●Prompts may include visual models, but prompts must also present the factors as numbers, and the answer sought is a number, not a picture. ●Each factor is greater than or equal to 0.01 and less than or equal to 99.99.The product must not have any non-zero digits beyond the thousandths place. (For example, 1.67 x 0.34 = 0.5678 is excluded because the product has an 8 beyond the thousandths place; cf. 5.NBT.3. ●Problems are 2-digit x 2-digit or 1-digit by 3- or 4-digit. (For example, 7.8 x 5.3 or 0.3 x 18.24.) ●20% of cases involve a whole number—either the product is a whole number, or else one factor is a whole number presented without a decimal point. (Both factors cannot both be whole numbers.)	MP.5, MP.7
5.NBT.7-4 Divide in problems involving tenths and/or hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	●Tasks do not have a context. ●Only the quotient is required. For the explain aspect of 5.NBT.7-4, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. ●Prompts may include visual models, but prompts must also present the dividend and divisor as numbers, and the answer sought is a number, not a picture. ●Divisors are of the form XY, X0, X, X.Y, 0.XY, 0.X, or 0.0X (cf. 5.NBT.6), where X and Y represent non-zero digits. Dividends are of the form XY, X0, X, XYZ.W, XY0.Z, X00.Y, XY.Z, X0.Y, X.YZ, X.Y, X.0Y, 0.XY, or 0.0X, where X, Y, Z, and W represent non-zero digits. ●Quotients are either whole numbers or else decimals terminating at the tenths or hundredths place. (Every included division problem is an unknown-factor problem included in 5.NBT.7-3.) ●20% of cases involve a whole number—either the quotient is a whole number, or the dividend is a whole number presented without a decimal point, or the divisor is a whole number presented without a decimal point. (If the quotient is a whole number, then neither the divisor nor the dividend can be a whole number.)	MP.5, MP.7
5.NBT.A.Int.1 Demonstrate understanding of the place value system by combining or synthesizing knowledge and skills articulated in 5.NBT.A.		MP.1, MP.7

5.NBT.Int.1 Perform exact or approximate multiplications and/or divisions that are best done mentally by applying concepts of place value, rather than by applying multi-digit algorithms or written strategies.	●Tasks do not have a context.	MP.1, MP.7.
Numbers and Operations Fractions (NF)		
5.NF.1-1 Add two fractions with unlike denominators, or subtract two fractions with unlike denominators, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad+bc)/bd.)	●Tasks have no context. ●Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. ●Tasks do not include mixed numbers. ●Tasks may involve fractions greater than 1 (including fractions equal to whole numbers). ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7
5.NF.1-2 Add three fractions with no two denominators equal by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum of fractions with like denominators. For example, 1/2 + 1/3 + 1/4 = (3/6 + 2/6) + 1/4 = 5/6 + 1/4 = 10/12 + 3/12 = 13/12 or alternatively 1/2 + 1/3 + 1/4 = 6/12 + 4/12 + 3/12 = 13/12.	●Tasks have no context. ●Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. ●Tasks do not include mixed numbers. ●Tasks may involve fractions greater than 1. ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7
5.NF.1-3 Compute the result of adding two fractions and subtracting a third, where no two denominators are equal, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 1/2 + 1/3 – 1/4 or 7/8 – 1/3 + 1/2.	●Tasks have no context. ●Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. ●Subtraction may be either the first or second operation. The fraction being subtracted must be less than both the other two. ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7
5.NF.1-4 Add two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum with like denominators. For example, 3 1/2 + 2 2/3 = (3 + 2) + (1/2 + 2/3) = 5 + (3/6 + 4/6) = 5 + 7/6 = 5 + 1 + 1/6 = 6 1/6.	●Tasks have no context. ●Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7
5.NF.1-5 Subtract two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent difference with like denominators.	●Tasks have no context. ●Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7

5.NF.2-1 Solve word problems involving addition and subtraction of fractions referring to the same whole, in cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.	●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. ●Tasks may involve fractions greater than one, including mixed numbers.	MP.1, MP.4, MP.5
5.NF.2-2 Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers to word problems involving addition and subtraction of fractions referring to the same whole in cases of unlike denominators. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.	●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. ●Tasks may involve fractions greater than one, including mixed numbers.	MP.2, MP.5, MP.7
5.NF.A.Int.1 Solve word problems involving knowledge and skills articulated in 5.NF.A.	●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1, MP.4, MP.5
5.NF.3-1 Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b).	●Tasks do not have a context.	MP.2
5.NF.3-2 Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?	●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. ●Note that one of the italicized examples in standard 5.NF.3 is a two-prompt problem.	MP.1, MP.4, MP.5
5.NF.4a-1 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. For a whole number q, interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)	●Tasks require finding a fractional part of a whole number quantity. ●The result is equal to a whole number in 20% of tasks; these are practiceforward for MP.7. ●Tasks have “thin context” or no context.	MP.7
5.NF.4a-2 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. For a fraction q, interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)	●Tasks have “thin context” or no context. ●Tasks require finding a product of two fractions (neither of the factors equal to a whole number). ●The result is equal to a whole number in 20% of tasks; these are practiceforward for MP.7.	MP.7

5.NF.4b-1 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. b. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	●50% of the tasks present students with the rectangle dimensions and ask students to find the area; 50% of the tasks give the factions and the product and ask students to show a rectangle to model the problem.	MP.2, MP.5
5.NF.5a Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	●Insofar as possible, tasks are designed to be completed without performing the indicated multiplication. ●Products involve at least one factor that is a fraction or mixed number.	MP.7, MP.8
5.NF.6-1 Solve real world problems involving multiplication of fractions, e.g., by using visual fraction models or equations to represent the problem.	●Tasks do not involve mixed numbers. ●Situations include area and comparison/times as much, with product unknown. ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1, MP.4, MP.5
5.NF.6-2 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	●Tasks present one or both factors in the form of a mixed number. ●Situations include area and comparison/times as much, with product unknown. ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1, MP.2, MP.5
5.NF.7a Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.		MP.5, MP.7
5.NF.7b Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.		MP.5, MP.7

5.NF.7c Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?	●Tasks involve equal group (partition) situations with part size unknown and number of parts unknown ●Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.2, MP.5, MP.7
Measurement and Data (MD)		
5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	●Measures may include those in whole cubic cm or cubic in.	MP.7
5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	●Tasks assess conceptual understanding of volume (see 5.MD.3) as applied to a specific situation—not applying a volume formula.	MP.7
5.MD.5b Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. b. Apply the formulas V = l × w × h and V = B × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.	●Tasks are with and without contexts. ●50% of tasks involve use of V = l × w × h and 50% of tasks involve use of V = B × h. ●Tasks may require students to measure to find edge lengths to the nearest cm, mm or in.	MP5, MP.7
5.MD.5c Relate the operations of multiplication and addition and solve real world and mathematical problems involving volume. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the nonoverlapping parts, applying this technique to solve real world problems.	●Tasks require students to solve a contextual problem by applying the indicated concepts and skills.	MP.2, MP.5